

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION**

**ORDER NO. R2-2003-0087**

WASTE DISCHARGE REQUIREMENTS AND WATER QUALITY CERTIFICATION FOR:

THE PORT OF SAN FRANCISCO

MAINTENANCE DREDGING PROGRAM, 2003 THROUGH 2008

The California Regional Water Quality Control Board, San Francisco Bay Region (herein called "the Regional Board"), **finds that:**

Purpose of Order

1. These Waste Discharge Requirements and Water Quality Certification apply to the Port of San Francisco (hereinafter "the Port") for maintenance dredging and grading of underwater shoals (knockdown dredging) at berths, piers, and marinas maintained by the Port along the San Francisco waterfront, and for disposal and beneficial reuse of dredged material created by these activities, over a period of approximately five years, from the effective date of this Order until December 31, 2008. The Port anticipates dredging and disposal of approximately 2.2 million cubic yards of material during this period.
2. The Port has applied for a U.S. Army Corps of Engineers individual permit (File No. 27549S) pursuant to Section 404 of the Clean Water Act (33 U.S. Code 1344). The Port has applied to the Regional Board for a Clean Water Act Section 401 (33 U.S. Code 1341) water quality certification that the project will not violate State water quality standards.

Location and Scope

3. The Port is located in the City and County of San Francisco on the west side of Central San Francisco Bay (see Figure 1, Regional Location Map). Maritime facilities maintained by the Port extend from the historic Hyde Street pier to Heron's Head Parks south of Pier 96 (see Figure 2, Facility Location Map). The Port conducts a maintenance dredging program to maintain safe navigation depths at its various facilities which include deep water berths serving cargo and cruise ships, commercial and recreational fishing vessel harbors and berths, a passenger ferry terminal, and small craft recreational marinas (see Figures 3 through 21). Dredging design area limits (footprints) include the faces, approaches, and entrance channels to each berthing area up to the limit of the adjacent pier.
4. The Port anticipates dredging approximately 2.2 million cubic yards of material during the five-year period that this Order is in effect. The Port is permitted to dredge all of the shaded areas shown in Figures 3 through 21 but may elect to dredge only a portion of the dredge footprint or dredge to a depth less than the permitted depth due to economic, timing, or other constraints.
5. Maintenance dredging of Port facilities will be performed using clamshell, hydraulic, or trailing suction hopper dredges.
6. Currently authorized project depths and estimated dredging volumes for Port facilities are listed below in Table 1:

**Table 1.** Dredging locations, project depths, and estimated dredging volumes

Location	Project Depth <sup>1</sup> (feet MLLW)	Estimated 5-Year Dredging Volume <sup>2</sup> (cubic yards)	Figure No.
Pier 9 South Berth	-20	10,000	3
Pier 9 North Berth	-35	10,000	3
Pier 15/17 Face	-40	2,000	3
Inner Fisherman's Wharf	-12 to -20	15,000	4
Outer Fisherman's Wharf	-20	75,000	4
Pier 45 E/43½ Berths	-35	50,000	5
Pier 43/41 Berths	-20	20,000	6
Pier 39 (East & West Marina Basins)	-12	60,000	7
Pier 35 East Berth	-35	400,000	8
Pier 35 West Berth	-35	415,000	9
Pier 33/31 (Hornblower) Berths	-35	15,000	10
Pier 29 Berth	-35	15,000	11
Pier 27 Berth	-35	120,000	12
Downtown Ferry Terminal, Ferry Plaza, Pier ½ and 1E Berth	-20	20,000	13
Pier 28 E to 30/32 Berths	-38	200,000	14
Pier 48/50 N Berths & Approach	-35	40,000	15
Pier 50 Face	-42	10,000	16
Pier 50 South Berth	-35	40,000	16
Pier 52 Basin	-20	12,000	17
Pier 54 N & S Berths and Approach	-35	15,000	17
Central Basin	-35	80,000	18
Piers 80, 90, 92 Berths, Islais Creek Channel, Approach Channels & Turning Basin	-40	250,000	19
Pier 94/96 Berths and Approach Channels	-40	150,000	19
China Basin	-20	15,000	20
South Beach Yacht Harbor	-20	80,000	21
Pier 36/38 N Berths	-35	25,000	21
Pier 38 S/40 Berths	-35	25,000	21
<i>Total for all locations</i>		<i>2,169,000</i>	

<sup>1</sup> These depths do not include overdredge allowance. Two-feet of overdredge is allowed in each dredging location.

<sup>2</sup> The dredge limit for berths listed as one dredging location generally extends from pier to pier. Proposed footprints for this 5-yr dredging cycle are as shown in the figures accompanying this Order.

7. Authorized project depths at Port of San Francisco berths not anticipated to be dredged in the 2003-2008 5-year dredging cycle are listed below in Table 2. These berths may be dredged, however, if conditions necessitate dredging in order to keep them functional.

**Table 2.** Permitted berths not scheduled for dredging in 2003-2008

Location	Project Depth <sup>1</sup> (feet MLLW)
Pier 23 S/Pier 19 N Berths	-35
Pier 19 S/ Pier 17 N Berths	-35
Pier 7 S/Pier 3 N Berths	-35
Pier 3 S/Pier 1 N Berths	-35
Pier 24 N Berth	-35
Pier 24 S/Pier 26 N Berths	-35
Pier 32 S/Pier 34 N Berths	-35
Pier 34 S/Pier 36 N Berths	-35

<sup>1</sup> These depths do not include overdredge allowance. Two-feet of overdredge is allowed in each dredging location.

### Knockdown Dredging

8. The Port plans to utilize non-routine knockdown dredging, or grading of underwater shoals, to supplement routine maintenance dredging episodes. Knockdown dredging is the redistribution of shoaled sediments within a project area, as opposed to regular maintenance dredging, in which shoaled sediments are removed completely. Knock-down dredging is performed by dragging an I-beam towed by a boat across a shoal in order to redistribute the shoaled material within the project area, or by excavating shoaled material with a small clamshell bucket and releasing the material near the bottom elsewhere within the project area. The equipment for performing knockdown dredging can be mobilized more quickly and less expensively than normal dredging equipment. Knock-down dredging will be most useful in supplementing routine maintenance dredging when time constraints may not allow for normal dredging, or when a shoal threatening navigation covers a small area of a project area that is otherwise at or below its permitted depth. Table 3 shows the projected locations and volumes that could be considered for knockdown events during the effective period of this Order.

**Table 3.** Knockdown dredging locations and maximum volumes

Proposed Locations for Knockdown Episodes During 5-Year Period (2003-2008)	Maximum Number of Episodes	Volume Per Episode (cubic yards)	Total Volume
Pier 35 East and West Berths	4	2,000	8,000
Piers 80, 90, 92 Berths, Islais Creek Channel, Approach Channels & Turning Basin	4	2,000	8,000
Other Areas as Needed	5	2,000	10,000
<i>Maximum 5-Year Volume</i>			<i>26,000</i>

### Disposal of Dredged Material

9. The Port will dispose of dredged material at a variety of locations. The exact location for disposal of material from each individual dredging episode will be determined as part of the episode approval process, and will depend on several factors including cost, quantity of

dredged material, physical, chemical, and biological characteristics of dredged material, and the availability of various disposal locations.

10. The general disposal options for the Port's dredged material include:
  - the Alcatraz Dredged Material Disposal Site (SF-11) in San Francisco Bay,
  - the Deep Ocean Disposal Site (SF-DODS), 50 miles offshore of San Francisco,
  - tidal and subtidal wetland creation,
  - construction fill for grading or to create new land,
  - levee maintenance, and
  - upland disposal.
11. The Port uses its Pier 94/96 Rehandling Facility to dry and rehandle dredged material that has been determined to not be suitable for unconfined aquatic disposal, based on its physical, chemical, or biological characteristics. Material dried at Pier 94/96 is eventually disposed of at upland locations, either at landfills or is used as construction fill at approved locations.

#### Approval of Dredging and Dredged Material Disposal Episodes

12. This Order requires that individual episodes of maintenance and knockdown dredging and dredged material disposal be approved by the Executive Officer prior to episode initiation (Provision B-9). Episode approval will be coordinated through the multi-agency Dredged Material Management Office (DMMO), of which the Regional Board is a member. The Executive Officer may approve a dredging episode based on the results of a tiered sediment testing framework conducted according to applicable federal and state guidance, and on analysis of practicable alternatives to aquatic disposal pursuant to Section 404(b)(1) of the Clean Water Act.

#### Project Changes

13. Because of variability in natural processes governing sedimentation, there may be changes in the dredging locations and volumes proposed in Table 1. This Order requires that the Port notify the Executive Officer in writing of material (significant) project changes (Provision B-2). Material changes in the discharge of dredged sediment may necessitate Board actions.

#### Long Term Management Strategy for Disposal of Dredged Material

14. The Regional Board is a participant in the Long Term Management Strategy (LTMS) for the Placement of Dredged Material in the San Francisco Bay Region along with the U.S. Army Corps of Engineers, the U.S. EPA, the San Francisco Bay Conservation and Development Commission and the State Water Resources Control Board. These LTMS agencies evaluated alternative management options for disposal and reuse of dredged sediment over a fifty-year planning horizon in a Policy Environmental Impact Statement/Environmental Impact Report (EIS/EIR) that was completed in October 1998. The EIS/EIR indicated that dredged material disposal may have adverse impacts on the beneficial uses of the waters of San Francisco Bay and that disposal of dredged material at designated sites in San Francisco Bay should be reduced from historical levels.
15. The LTMS agencies have determined that the preferred alternative is to reduce disposal in the Bay to a long-term average of 1.25 million cubic yards per year. This goal can be accomplished by disposing of more dredged material at SF-DODS and beneficially reusing dredged material. The Regional Board finds that it is in the public interest to encourage ocean

disposal and beneficial reuse of suitable dredged materials to reduce the volume of disposal in San Francisco Bay.

16. Implementation of the LTMS long-term goal will occur in a phased program, as described in the LTMS Management Plan, adopted by the Regional Board on June 19, 2001. Initial efforts to reduce in-Bay disposal of dredged material will be voluntary on the part of all Bay-area dredging project proponents. Bay-area dredgers will be assigned annual allocations of in-Bay disposal volumes that will decrease every three years until the long-term goal is reached in 2012. During the voluntary phase of LTMS implementation, allocations will serve as targets. If voluntary efforts do not produce progress to the goal of reduced in-Bay disposal, the goal will be achieved through a mandatory (regulatory) approach where dredging project proponents will not be authorized to dispose of amounts of dredged material in San Francisco Bay in excess of their allocated volumes.
17. The framework described in this Order for determining dredged material disposal locations for individual dredging episodes is consistent with the voluntary phase of the LTMS Management Plan.

#### Impacts of Dredging and in-Bay Disposal

18. Bay-wide impacts of dredging and dredged material disposal activities have not been well quantified. In order to minimize potential impacts of these activities on threatened and endangered species, the California Department of Fish and Game, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service issued Biological Opinions on the LTMS EIS/EIR. The Opinions set work windows, during which projects are authorized for incidental take under the Endangered Species Act. Dredging or disposal of dredged material proposed for times outside of work windows may be approved through a consultation process with the resource agencies. This Order requires that the Port comply with the work windows (contained in Tables F-1 and F-2 of Appendix F of the LTMS Management Plan) or obtain written authorization from the resource agencies for work proposed outside of these windows (Provisions B-6 and B-7).
19. Although several studies have been conducted on the impacts of dredged material disposal, formal management of the in-Bay disposal sites needs to be improved. Additional information is needed to assess the cumulative and long-term effects of dredging and dredged material disposal. Particular areas of focus should be: 1) fate of dredged material disposed at the currently authorized disposal sites, 2) evaluation of an appropriate initial mixing zone for dredged material disposal, 3) status of residual dredged material at the disposal sites (physical properties, size and extent of the Alcatraz mound, etc.), and 4) how the dredging and disposal process affects the bioavailability of chemicals that currently impair the beneficial uses of San Francisco Bay. The Regional Board recognizes the need for more information about these concerns and therefore endorses a study-based approach to monitor the effects of dredging and dredged material disposal. In the absence of such information, the reduction of in-Bay disposal as described in the LTMS Management Plan is necessary to protect water quality in San Francisco Bay.

#### Request for Technical Information

20. Pursuant to California Water Code Section 13267, this Order requires the Port to provide technical information on the water quality impacts of discharges of dredged material into San

Francisco Bay (Provision B-11). The information is necessary to further understand the impacts of the discharges, and the burden in providing the information bears a reasonable relationship to the need for the report and the benefits to be obtained. The San Francisco Estuary Regional Monitoring Program for Trace Substances (RMP) is a coordinated and comprehensive long-term monitoring program with the goal of monitoring water and sediment quality to determine compliance with relevant numerical objectives and studying bioaccumulation at an array of Bay locations. The program is administered by the San Francisco Estuary Institute, located in Oakland, California, with oversight by the Regional Board. In previous years, the Port (along with many other Bay Area dischargers) elected to provide the information required by Provision B-11 by contributing money annually to the RMP, based on annual volumes of in-Bay dredged material disposal. The Board hereby encourages the Port to continue to provide the required information in this manner.

#### CEQA

21. The project is categorically exempt from the requirements of the California Environmental Quality Act pursuant to Title 14 of the California Code of Regulations, Section 15304(g). The Regional Board has filed a Notice of Exemption for the project with the State Clearinghouse.

#### Basin Plan and Beneficial Uses

22. The Regional Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on June 21, 1995. This plan was approved by the State Water Resources Control Board and the Office of Administrative Law on July 20 and November 13, 1995, respectively. A summary of regulatory provisions is contained in Title 23 of the California Code of Regulations, section 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwaters.
23. The beneficial uses of San Francisco Bay in the vicinity of the dredging and disposal areas are:
  - a. Fish migration and spawning
  - b. Estuarine habitat
  - c. Wildlife habitat
  - d. Preservation of rare and endangered species
  - e. Water contact and non-contact water recreation
  - f. Shellfish harvesting
  - g. Commercial and sport fishing
  - h. Navigation
  - i. Industrial process and service supply
24. The Port and interested persons have been notified of the Regional Board's intent to issue requirements for the Port and have been provided with the opportunity to submit their written comments.
25. Any violation of provisions of this Order is subject to administrative civil enforcement pursuant to the California Water Code. Failure to meet any condition of this Order may subject the Port to civil penalty imposed by the Regional Board to a maximum of \$5,000 per day of violation or \$10 for each gallon of waste discharged in violation of this Order.

26. The Regional Board, in a properly noticed public hearing on September 17, 2003 heard and considered all comments pertaining to this Order.
27. This Order certifies that with the incorporation of the following provisions, any discharge from the project will comply with the applicable provisions of sections 301 ("Effluent Limitations"), 302 ("Water Quality Related Effluent Limitations"), 303 ("Water Quality Standards and Implementation Plans"), 306 ("National Standards of Performance"), and 307 ("Toxic and Pretreatment Effluent Standards") of the Clean Water Act.

IT IS HEREBY ORDERED, pursuant to the provisions of Division 7 of the California Water Code and regulations adopted hereunder and to the provisions of the Federal Water Pollution Control Act, as amended, and regulations and guidelines adopted hereunder, that the Port shall comply with the following:

**A. RECEIVING WATER LIMITATIONS**

1. The dredging and disposal activities shall not create a nuisance as defined in Section 13050(m) of the California Water Code.
2. The discharge of waste shall not cause the following conditions to exist in waters of the State that cause a nuisance or adversely affect beneficial uses at any place:
  - a. Floating, suspended, or deposited macroscopic particulate matter or foam;
  - b. Aquatic growths;
  - c. Significant alteration of temperature, turbidity, or apparent color beyond present natural background levels;
  - d. Visible, floating, suspended, or deposited oil or other products of petroleum origin;
  - e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.
3. The discharge of waste shall not cause the following limits to be exceeded in waters of the State in any place within one foot of the water surface:
  - a. Dissolved Oxygen                      5.0 mg/l minimum.  
When natural factors cause lesser concentrations,  
then this discharge shall not cause further reduction  
in the concentration of dissolved oxygen.
  - b. Dissolved sulfide                      0.1 mg/l maximum.
  - c. pH    Variation from natural ambient pH by more than  
0.5 pH units.

- d. Un-ionized ammonia                      0.025 mg/l as N Annual Median  
    0.16 mg/l as N Maximum
- e. Toxic or other deleterious substances                      None shall be present in concentrations or quantities which may cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentrations.
4. The discharge shall not cause a violation of any applicable water quality objectives for receiving waters adopted by the Regional Board and the State Water Resources Control Board as required by the Clean Water Act and regulations adopted hereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Regional Board will revise and modify this Order in accordance with such more stringent standards.

## **B. PROVISIONS**

### Project and Project Changes

1. This Order authorizes maintenance dredging and knockdown dredging, of up to 2.2 million cubic yards of dredged material as described in Table 1, and disposal of up to 2.2 million cubic yards at the Alcatraz Island Disposal Site in San Francisco Bay, subject to written authorization by the Executive Officer on an episode-by episode basis. Disposal of dredged material may also occur at the Deep Ocean Disposal Site, beyond the jurisdiction of the Regional Board, or at beneficial reuse locations within the Regional Board's jurisdiction, subject to Executive Officer approval. The Executive Officer may approve a dredging episode based on the results of a tiered sediment testing framework conducted according to applicable federal and state guidance, and on analysis of practicable alternatives to aquatic disposal pursuant to Section 404(b)(1) of the Clean Water Act.
2. The Port shall inform the Executive Officer in writing of any material changes to the project plan in Table 1 of this Order. Significant changes include the total 5-year dredging volume exceeding 2.2 million cubic yards, the total dredging volume for any year exceeding 440,000 cy (approximately one-fifth of the total 5-year dredging volume), addition of new dredging areas, and deepening of dredging areas beyond the depths specified in Table 1. The Executive Officer shall determine if such a proposed change requires Board modification of the Waste Discharge Requirements and Water Quality Certification issued herein. If the Executive Officer determines that a modification is needed, the Port shall submit a request for revised Waste Discharge Requirements and Water Quality Certification for action by the Board. Proposed changes that would require modification to this Order include but are not limited to any changes that may result in an overall increase in the amount of in-Bay disposal or an increased threat to water quality. The Executive Officer may approve minor project changes that do not require modification to this Order and which will not result in an increased threat to water quality.



### Dredging and Disposal Operations

3. Dredging at each project location shall be limited to the project depths and overdredge allowances shown in Tables 1 and 2, and the associated figures.
4. No overflow shall be discharged from any barge, with the exception of spillage incidental to clamshell dredge operations.
5. Return water overflow from hopper-type suction dredges shall be limited to no longer than 15 minutes at the dredge site during any one excavation action (pass).
6. Dredging and disposal activities shall be limited to the work windows set out by the California Department of Fish and Game, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service in their Biological Opinions on the LTMS, unless written authorization by the appropriate agencies to work outside these windows is provided to the Executive Officer.
7. Discharges of dredged material shall comply with the following annual volume target limits for overall in-bay disposal and monthly volume target limits for disposal at the Alcatraz Island Disposal Site, as specified in Table 4-15 of the 2001 Basin Plan Amendment:

#### **Annual Total Disposal Volume at all In-bay Aquatic Disposal Sites:**

2001-2003	2.80 million cubic yards
2004-2006	2.41 million cubic yards

#### **Monthly Total Volume at Alcatraz Island:**

October – April	0.4 million cubic yards
May – September	0.3 million cubic yards

### Episode Approval

8. Individual maintenance dredging, knock-down dredging, advance maintenance dredging, and disposal episodes shall not commence until authorized in writing by the Executive Officer, following review by the Dredged Material Management Office (DMMO). Project descriptions, requests for dredged material suitability determinations, and evaluations of disposal alternatives (see Provision B-10, below) shall be reviewed by the DMMO. The Port shall follow applicable federal and state guidance on a tiered testing framework and on the preparation of reports.
9. For each dredging episode where disposal of dredged material in waters of the U.S. is proposed, the Port shall, as part of the episode approval process, submit to the DMMO an evaluation of alternative disposal sites pursuant to Section 404(b)(1) of the Clean Water Act. Evaluations shall include analyses of the feasibility of at least the following disposal options, and any others that are potentially available at the time of the analysis:
  - Open ocean disposal at SF-DODS,
  - Tidal and sub-tidal habitat creation or restoration,
  - Construction fill for grading or to create new land,
  - Levee maintenance, and
  - Upland disposal

Technical and Annual Reports


10. The Port shall provide technical reports regarding the impacts of dredged material disposal on waters of the State, pursuant to Section 13267 of the California Water Code.
11. No later than January 31<sup>st</sup> of each year, the Port shall provide an annual report summarizing the locations, quantities (calculated from pre- and post-dredge surveys), and ultimate disposal sites for all dredging during the previous year.

Standard Provisions

12. The discharge of dredged materials to the waters of the State shall cease immediately whenever violations of this Order are detected by the Port or by Board staff as determined by the Executive Officer, and the discharge shall not resume until compliance can be assured to the Executive Officer's satisfaction.
13. The Port or its representative shall notify Regional Board staff immediately by telephone whenever an adverse condition occurs as a result of this activity. An adverse condition includes, but is not limited to, a violation or threatened violation of conditions of this certification, or a significant spill of petroleum products or toxic chemicals. Pursuant to Section 13267(b) of the California Water Code, a written notification of adverse condition shall be submitted to the Regional Board within 30 days of occurrence. The written notification shall identify the adverse condition, describe the action necessary to remedy the condition, and specify a timetable, subject to the modifications of the Regional Board, for remedial actions.
14. The Port shall permit the Regional Board or its authorized representative in accordance with California Water Code Section 13267(c) as follows:
  - a. Entry upon premises in which any required records are kept.
  - b. Access to copy any records required to be kept under terms and conditions of this order.
  - c. Inspection of monitoring equipment or records.
  - d. Sampling of any discharge.
  - e. Provide small craft transport to offshore locations or vessels for the purpose of inspection, provided that it is within normal business hours.
15. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section 13330 of the CWC and Section 3867 of Title 23 of the California Code of Regulations (23 CCR).
16. This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to 23 CCR Subsection 3855(b) and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.
17. Certification is conditioned upon total payment of the full fee required in State regulations (23 CCR Section 3833) and owed by the applicant. The Regional Board received the full application fee of \$20,000 on April 25, 2003.

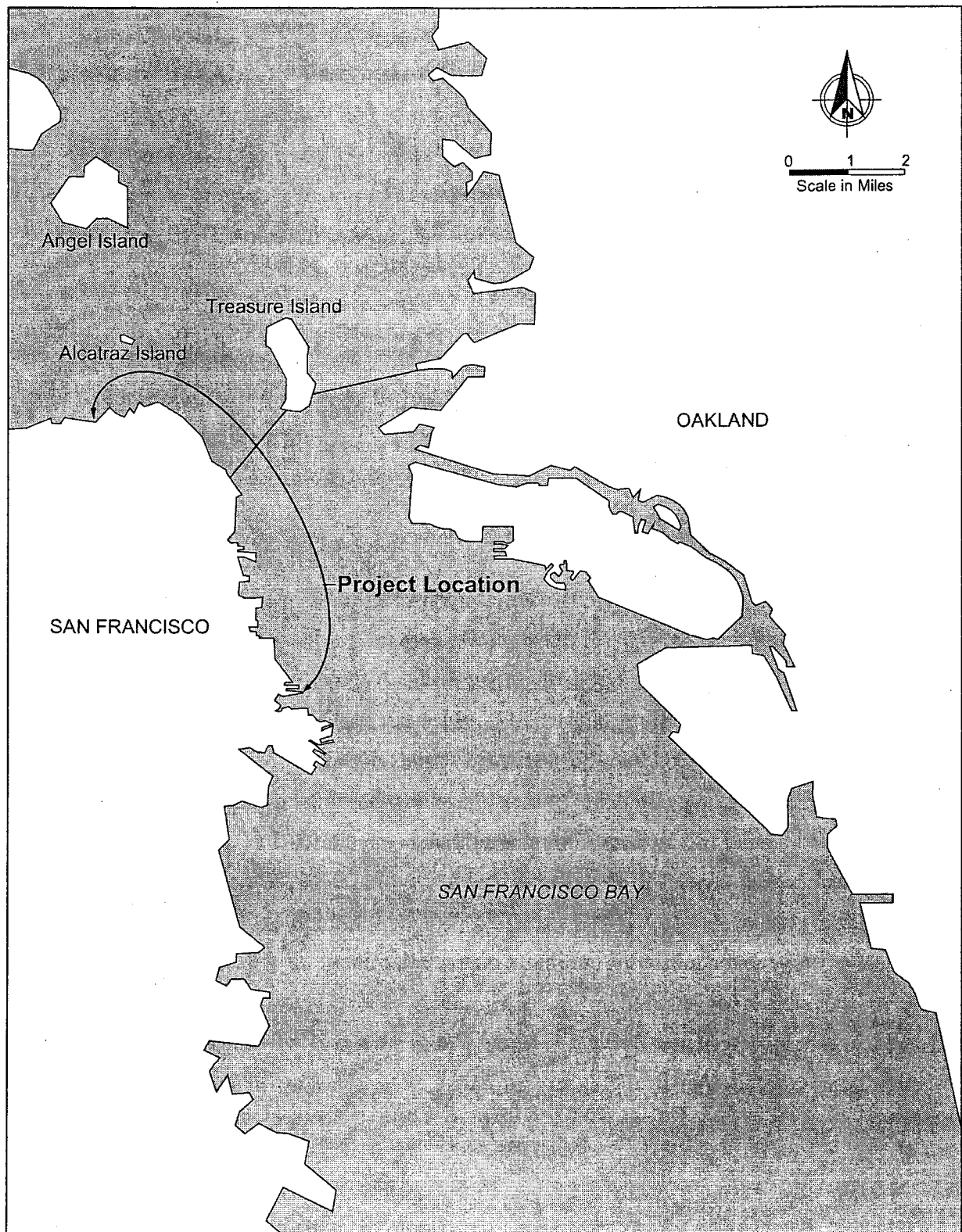
18. This Order will expire on December 31, 2008.

I, Loretta K. Barsamian, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on September 17, 2003.

  
LORETTA K. BARSAMIAN  
EXECUTIVE OFFICER

Attachments:

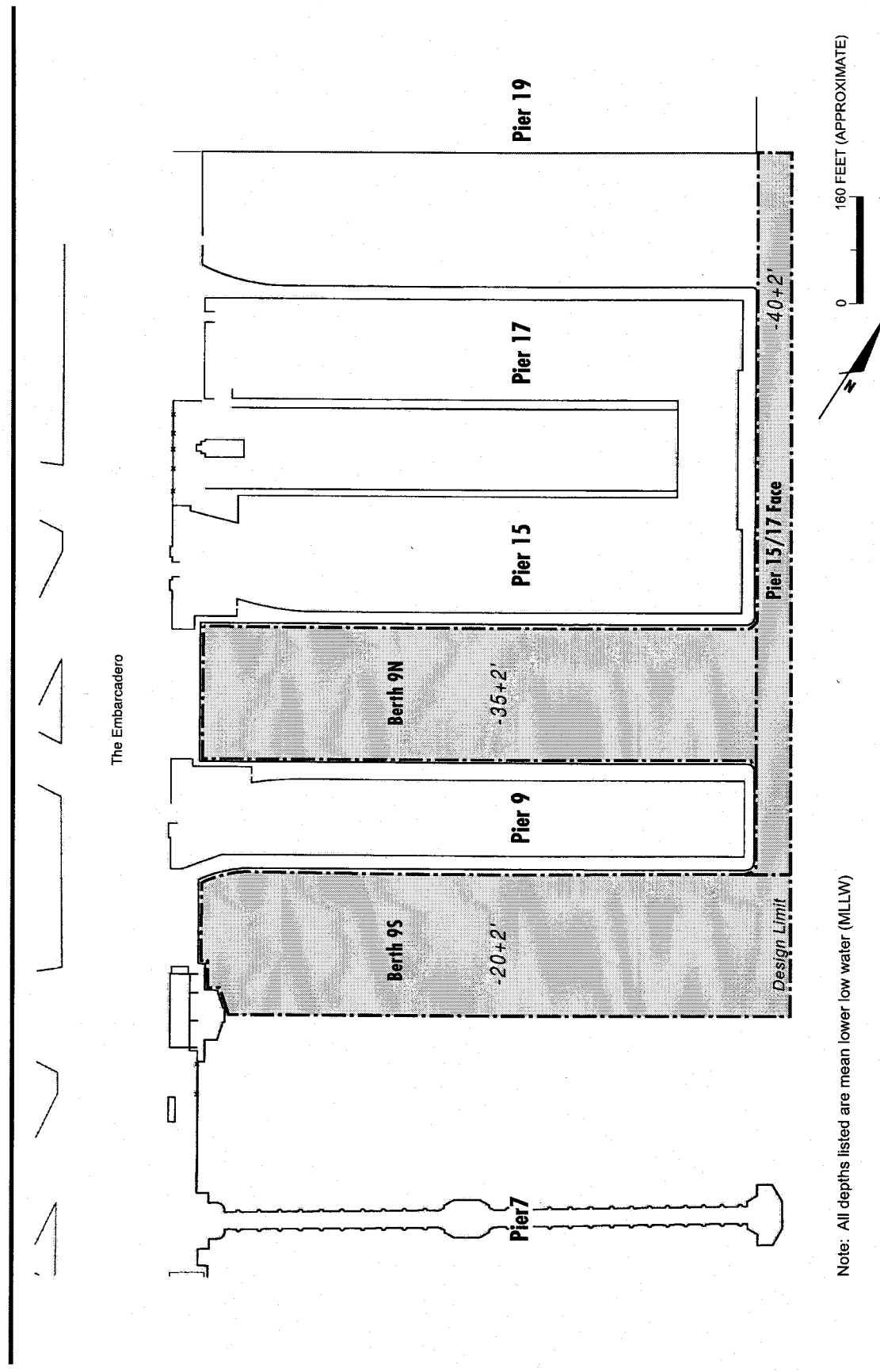
Figure 1 – Site Location Map  
Figure 2 – General Vicinity Map of Port of San Francisco Facilities  
Figure 5-1 – Piers 9 and 15/17  
Figure 5-2 – Inner and Outer Fisherman's Wharf (Piers 45 and 47)  
Figure 5-3 – Pier 45 E  
Figure 5-4 – Pier 43  
Figure 5-5 – Pier 39 (East and West Marina Basins)  
Figure 5-6a – Pier 35 East  
Figure 5-6b – Pier 35 West  
Figure 5-7 – Piers 31 and 33  
Figure 5-8 – Pier 29  
Figure 5-9 – Pier 27  
Figure 5-10 – Downtown Ferry Terminal  
Figure 5-11 – Piers 30/32  
Figure 5-12 – Piers 48/50N  
Figure 5-13 – Pier 50 South  
Figure 5-14 – Piers 52 and 54 N&S  
Figure 5-15 – Central Basin  
Figure 5-16 – Piers 80, 90-96  
Figure 5-17 – China Basin  
Figure 5-18 – South Beach Yacht Harbor and Piers 38/40



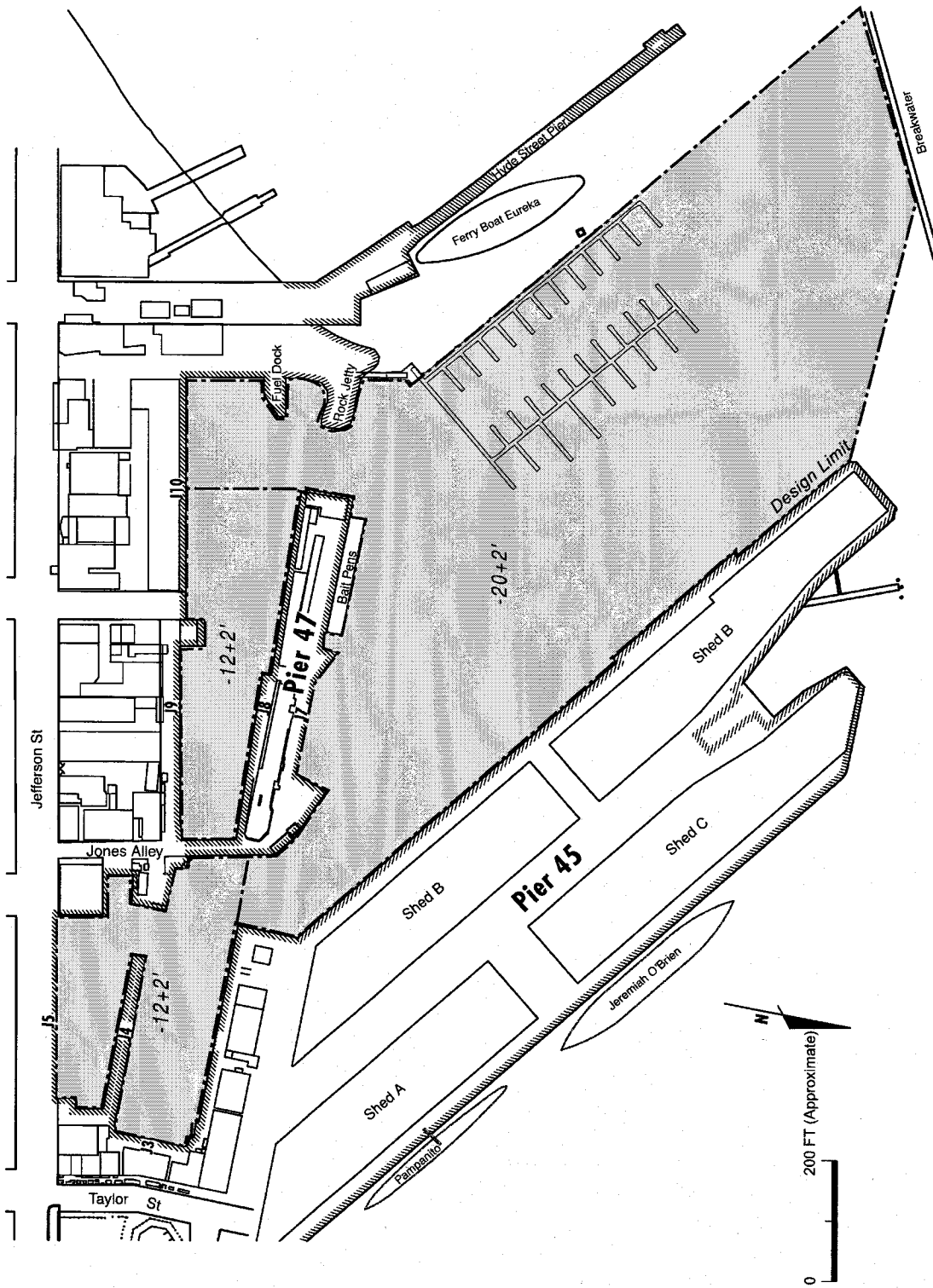
**Figure 1. Port of San Francisco Regional Location Map**



Figure 2. General Vicinity Map of Port of San Francisco Facilities

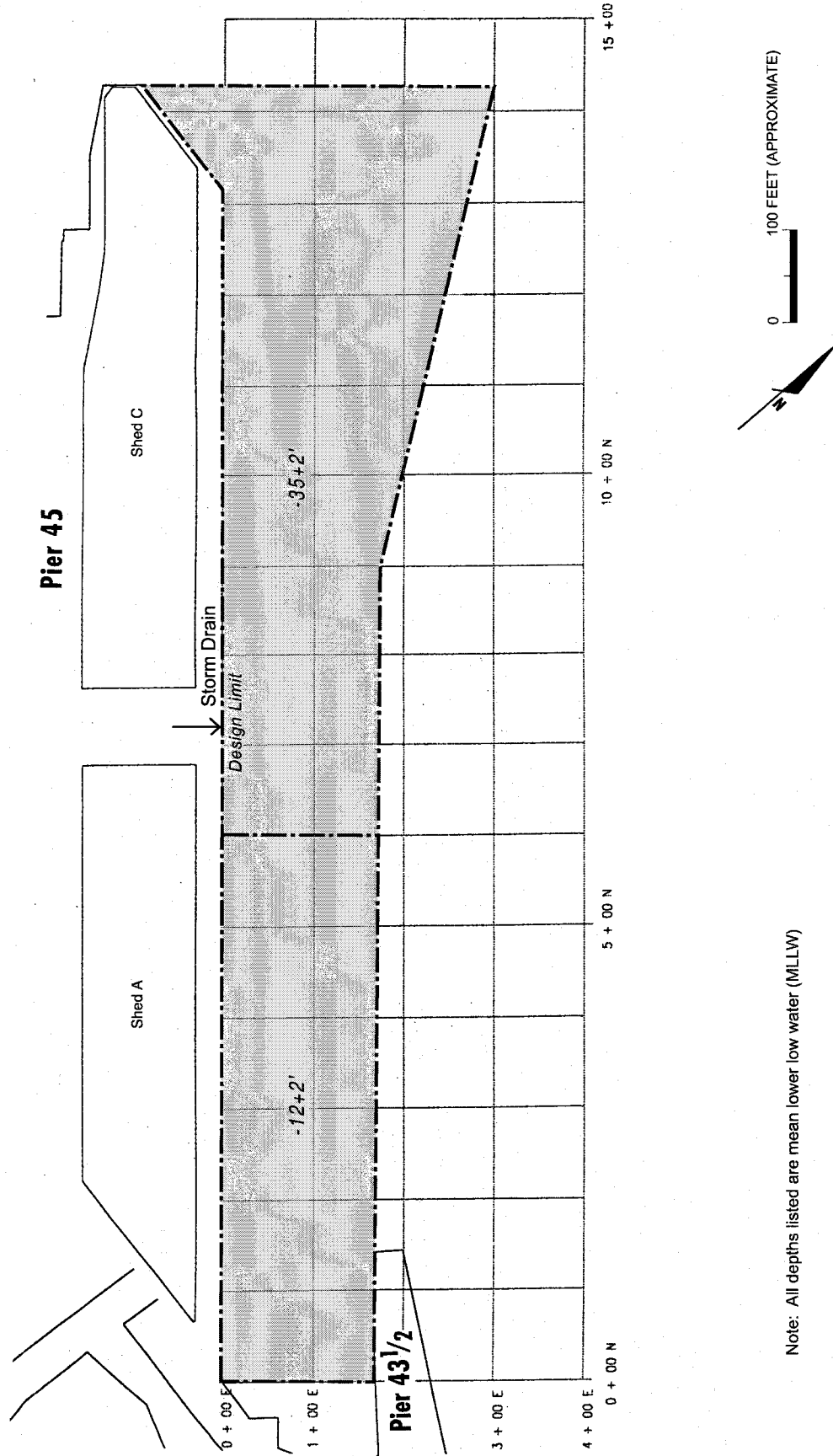


Piers 9 and 15/17 Dredge Site Figure 3



Source: Port of San Francisco, San Francisco Port Commission, Department of Engineering

Fisherman's Wharf Piers 45 and 47 Dredge Site Figure 4

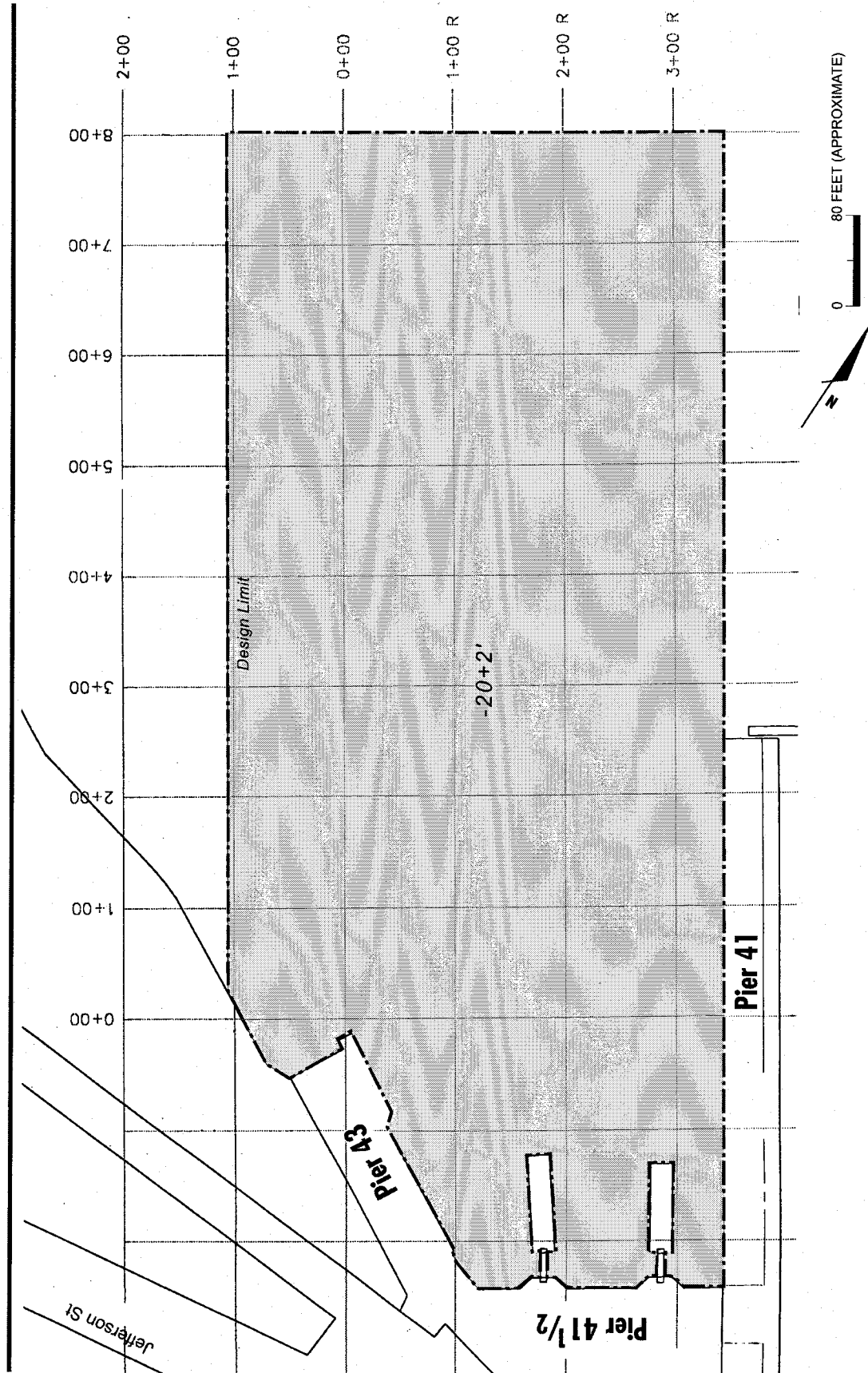


Note: All depths listed are mean lower low water (MLLW)

Source: Port of San Francisco, San Francisco Port Commission, Department of Engineering

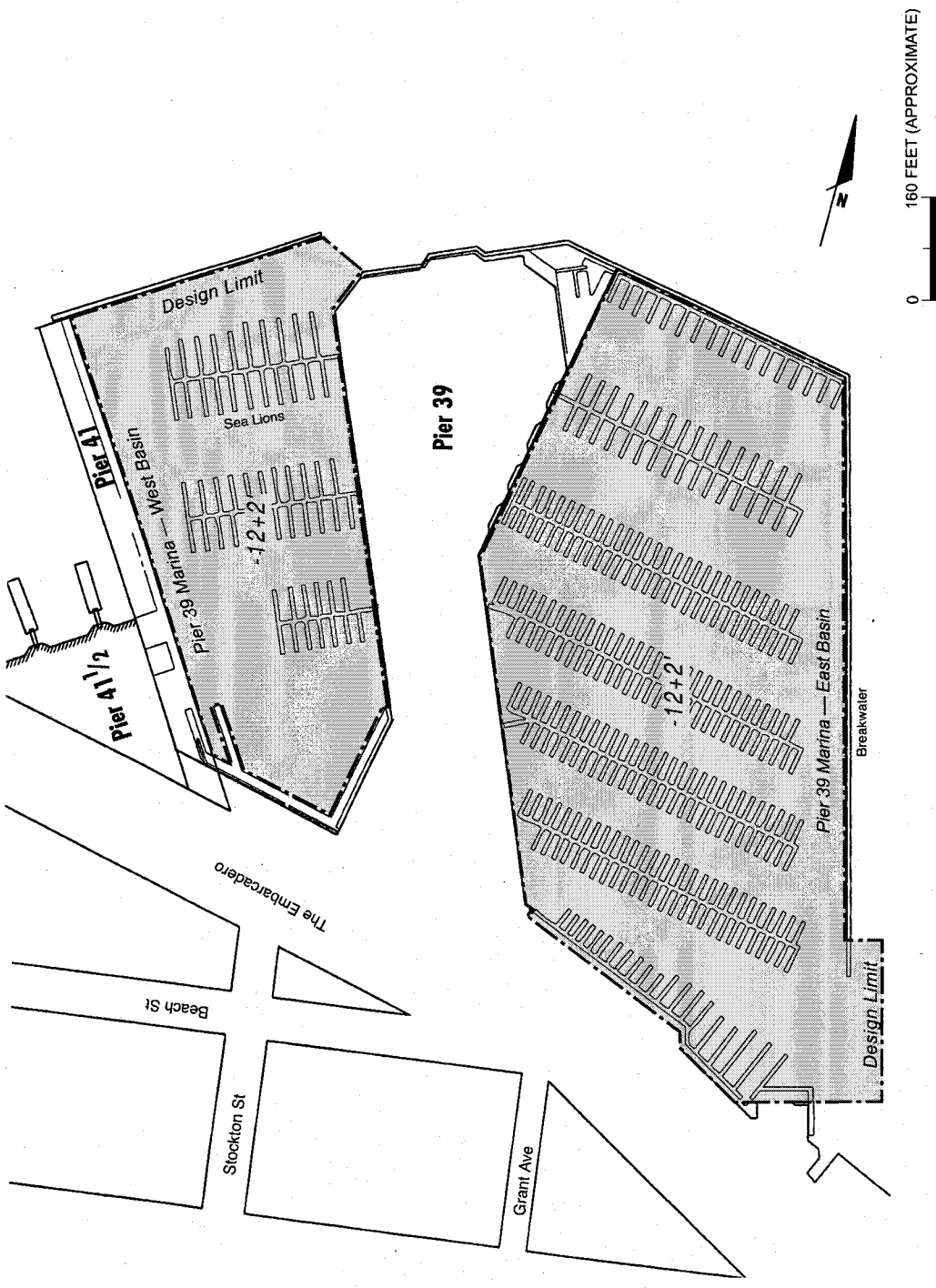
Pier 45E Dredge Site Figure 5





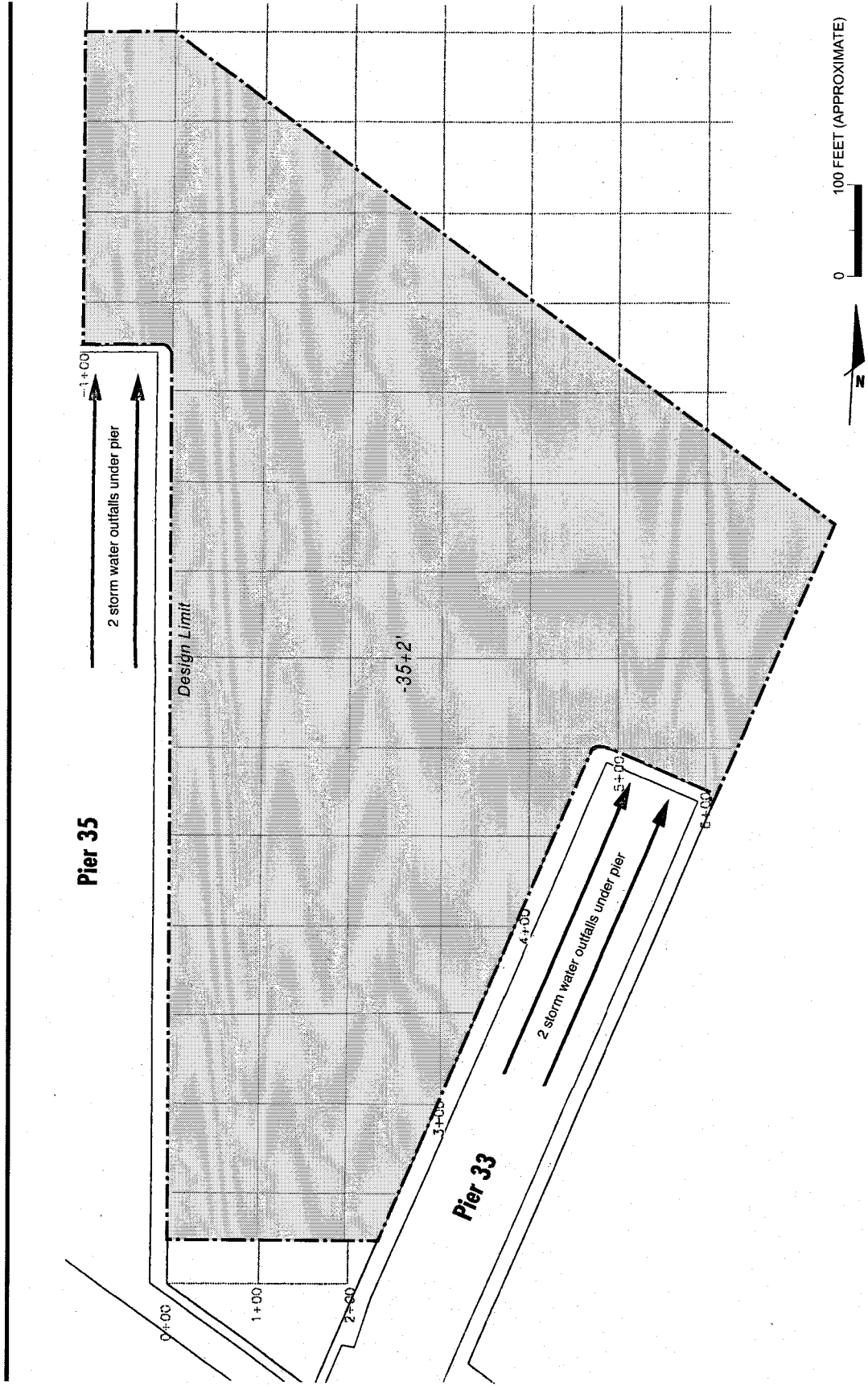
Source: Port of San Francisco, San Francisco Port Commission, Department of Engineering

Pier 43 Dredge Site Figure 6



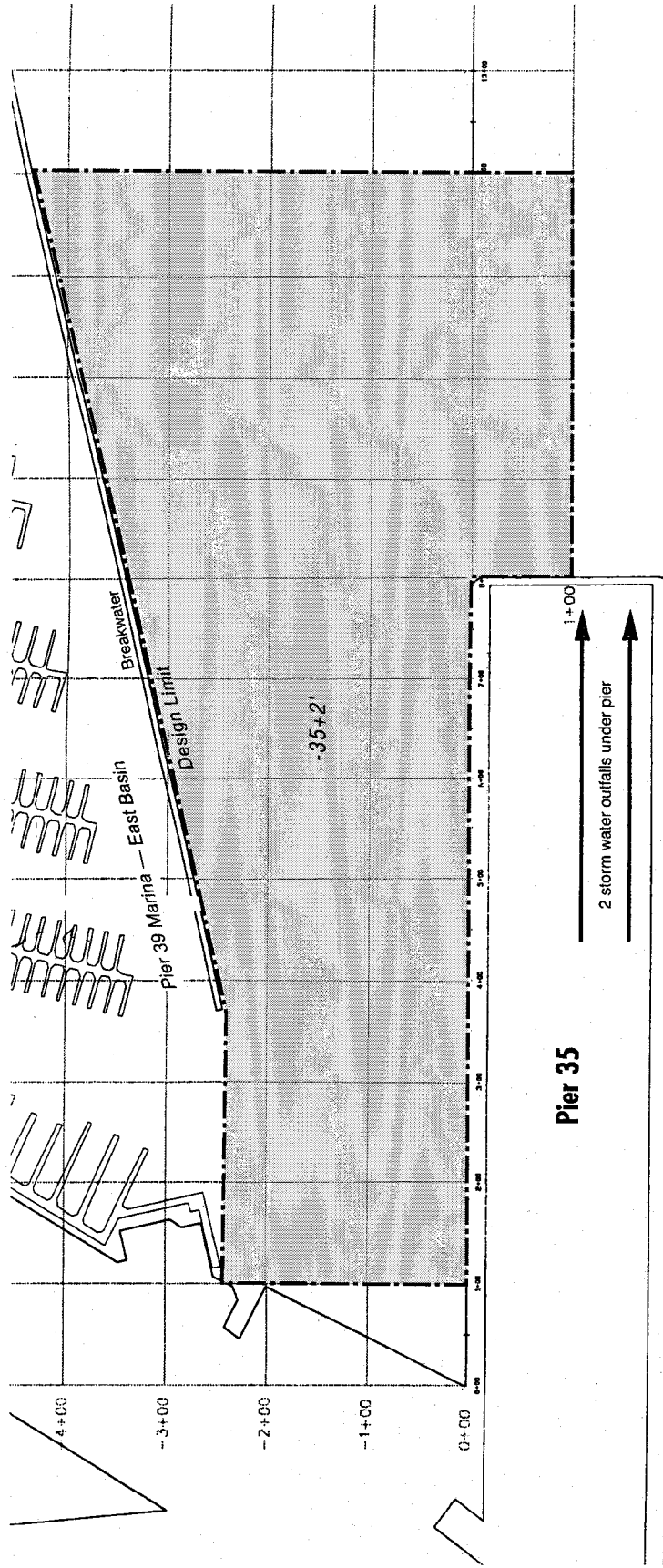
Source: Port of San Francisco, San Francisco Port Commission, Department of Engineering

Pier 39 Dredge Sites      Figure 7



Source: Port of San Francisco, San Francisco Port Commission, Department of Engineering

**Pier 35E Dredge Site Figure 8**

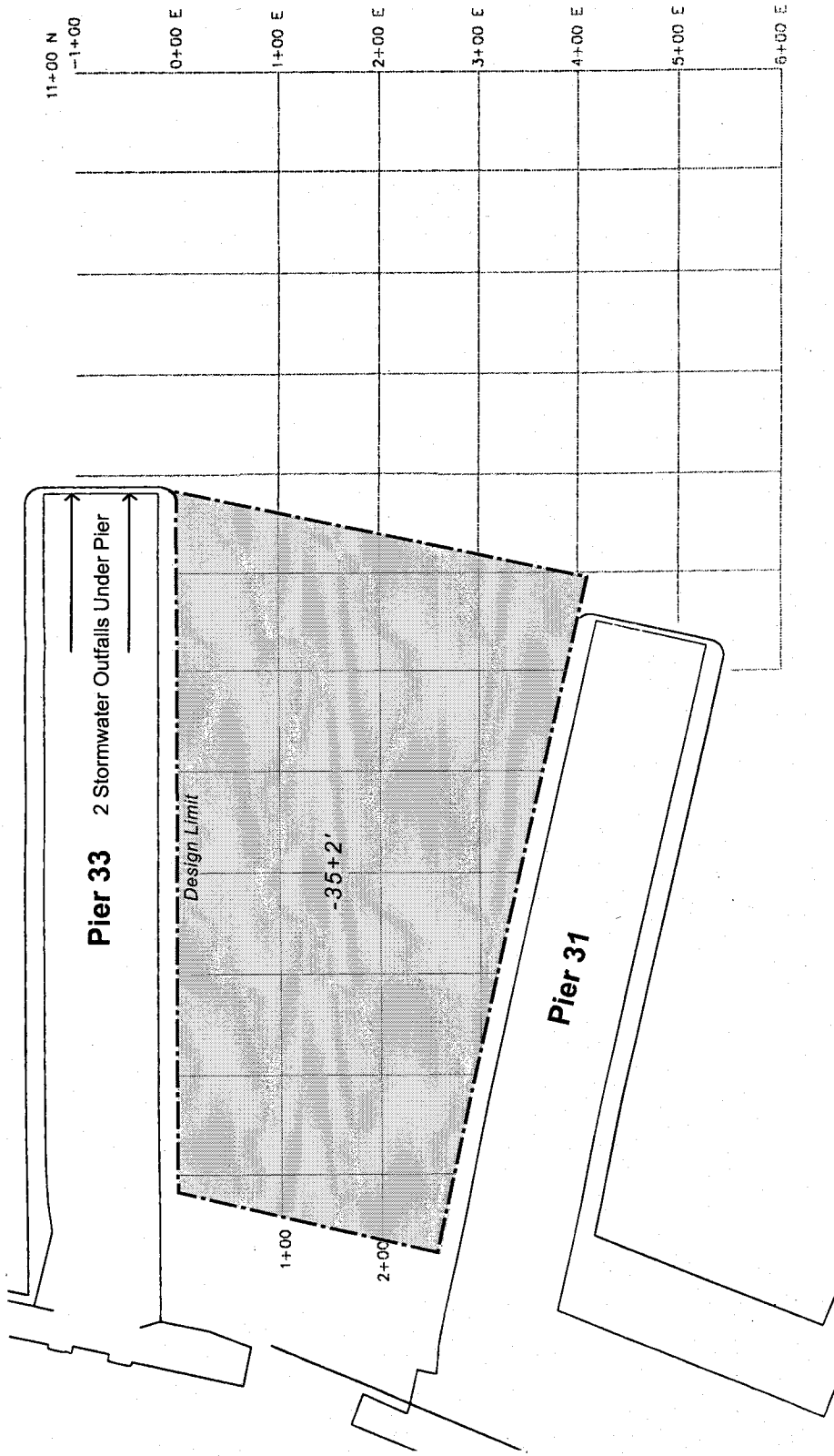


Note: All depths listed are mean lower low water (MLLW)



Source: Port of San Francisco, San Francisco Port Commission, Department of Engineering

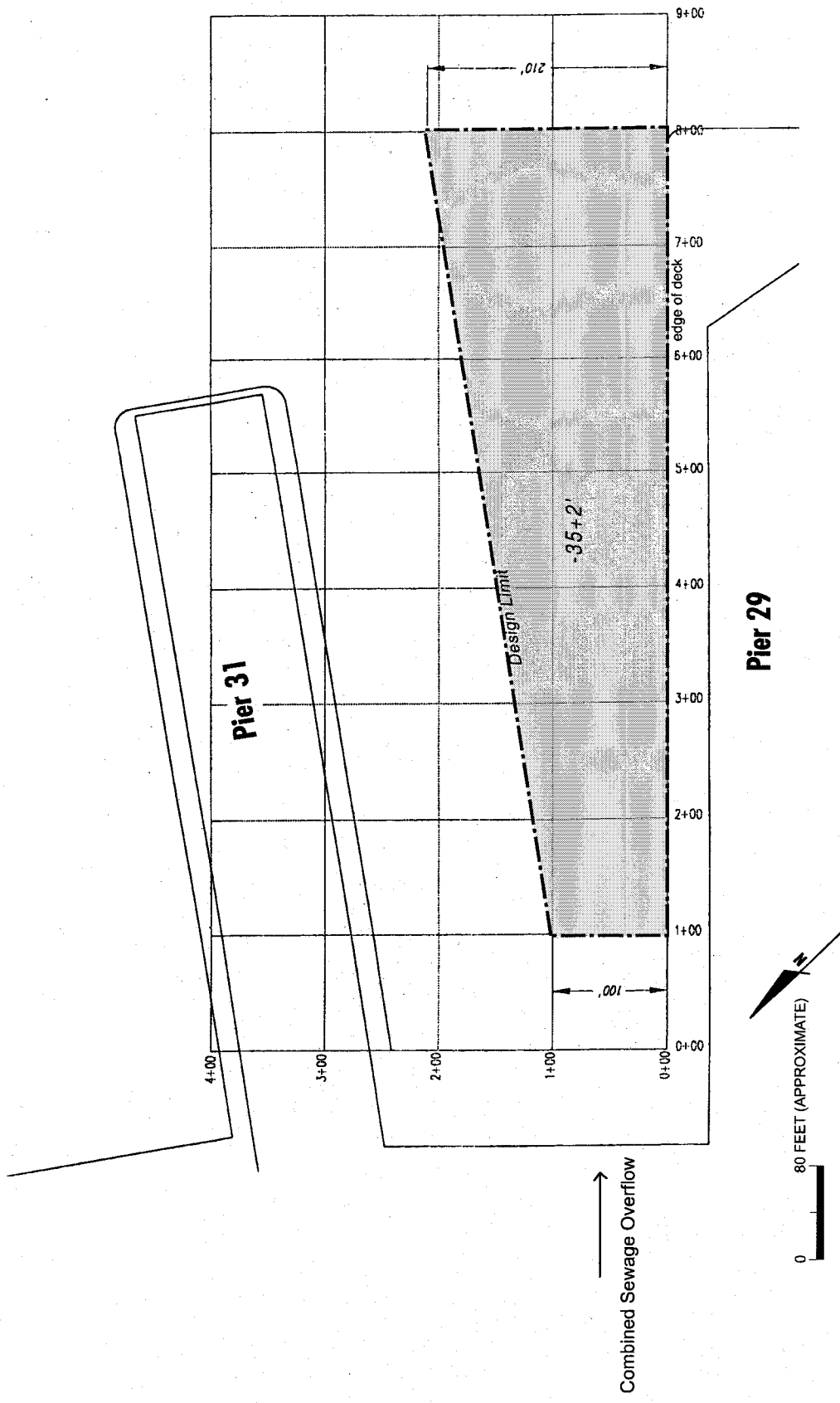
Pier 35W Dredge Site Figure 9



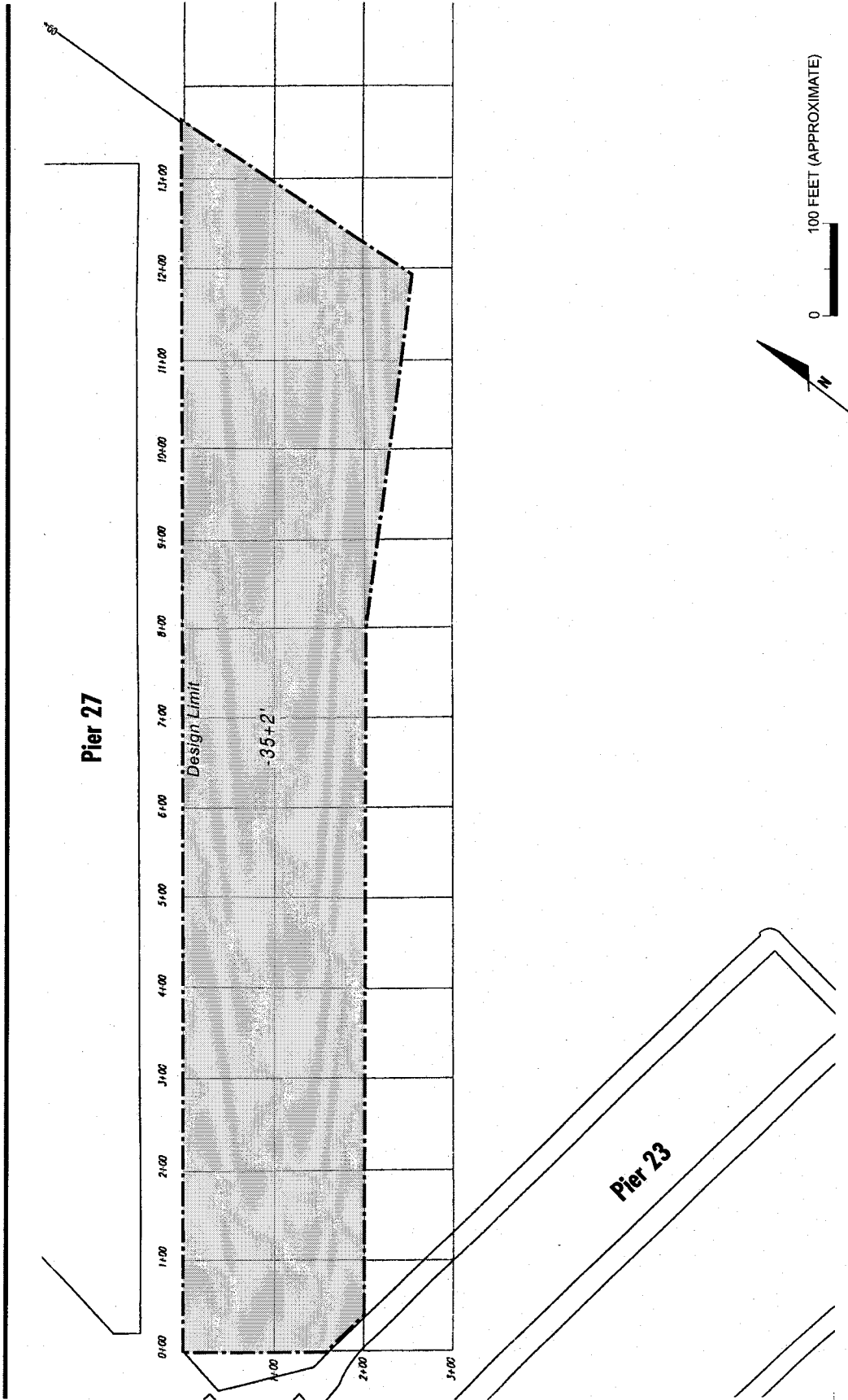
Note: All depths listed are mean lower low water (MLLW)

Source: Port of San Francisco, San Francisco Port Commission, Department of Engineering

Piers 31 and 33 Dredge Site Figure 10

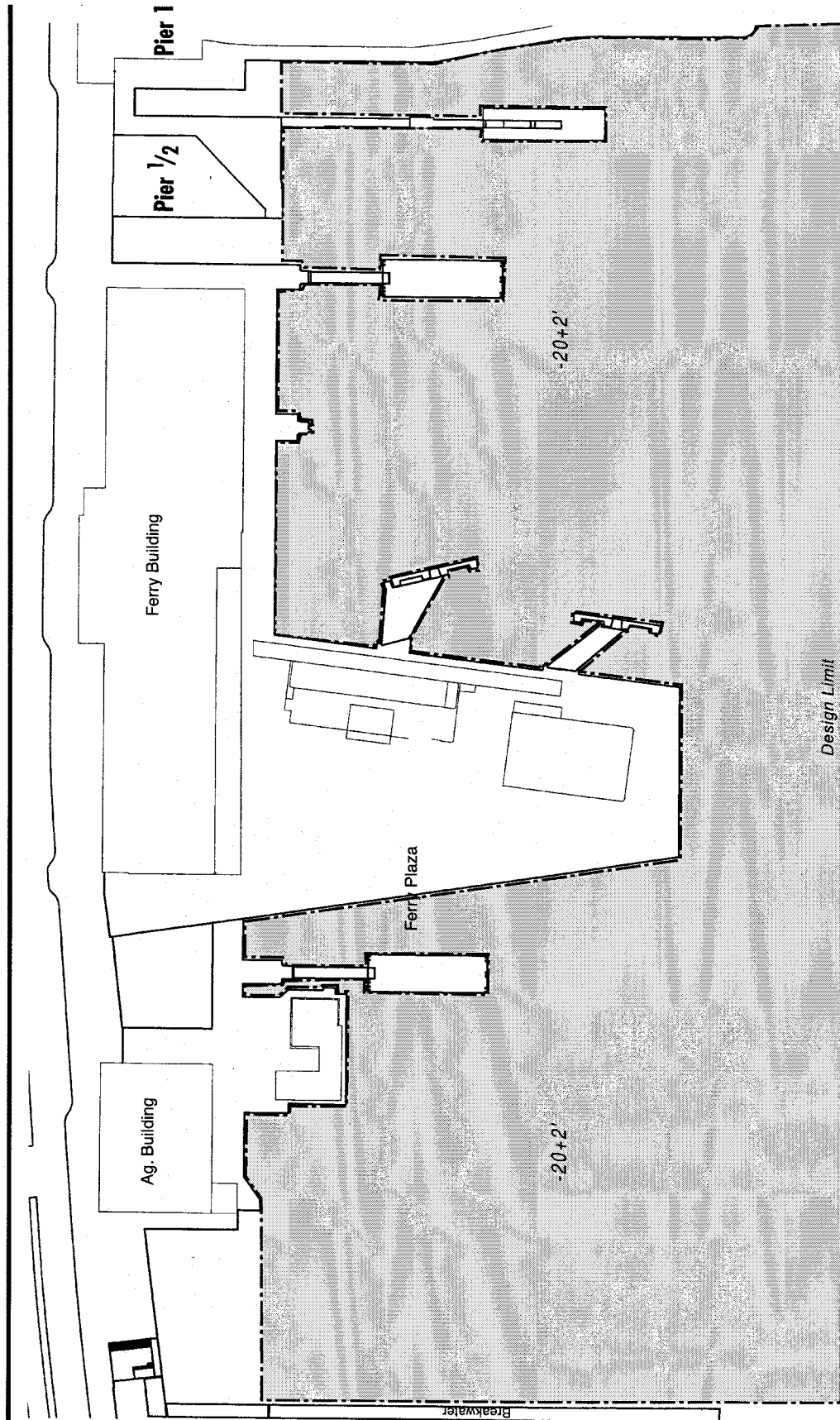


Pier 29 Dredge Site Figure 11



Source: Port of San Francisco, San Francisco Port Commission, Department of Engineering

**Pier 27 Dredge Site Figure 12**

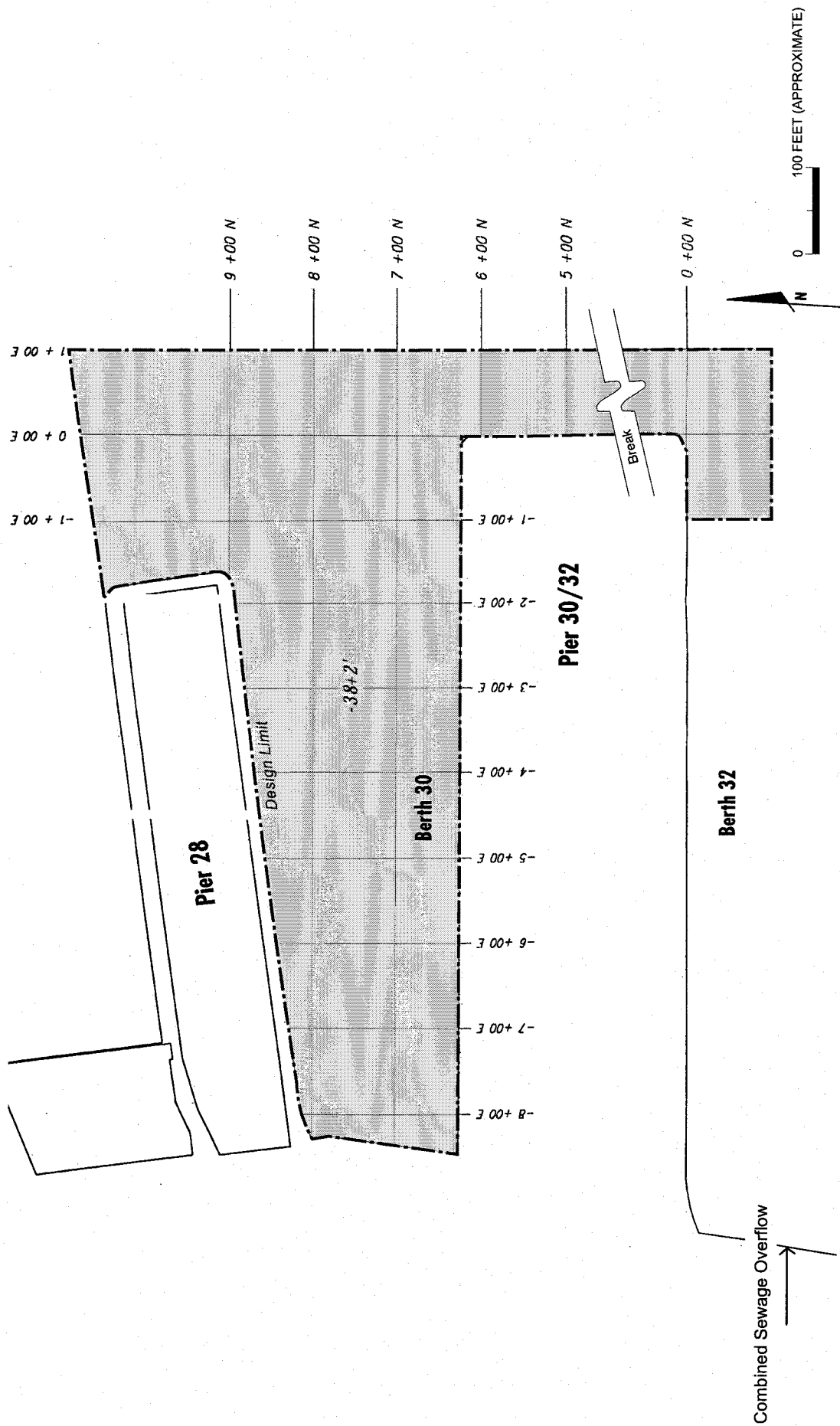


Note: All depths listed are mean lower low water (MLLW)

Source: Port of San Francisco, San Francisco Port Commission, Department of Engineering

Downtown Ferry Terminal Dredge Site Figure 13

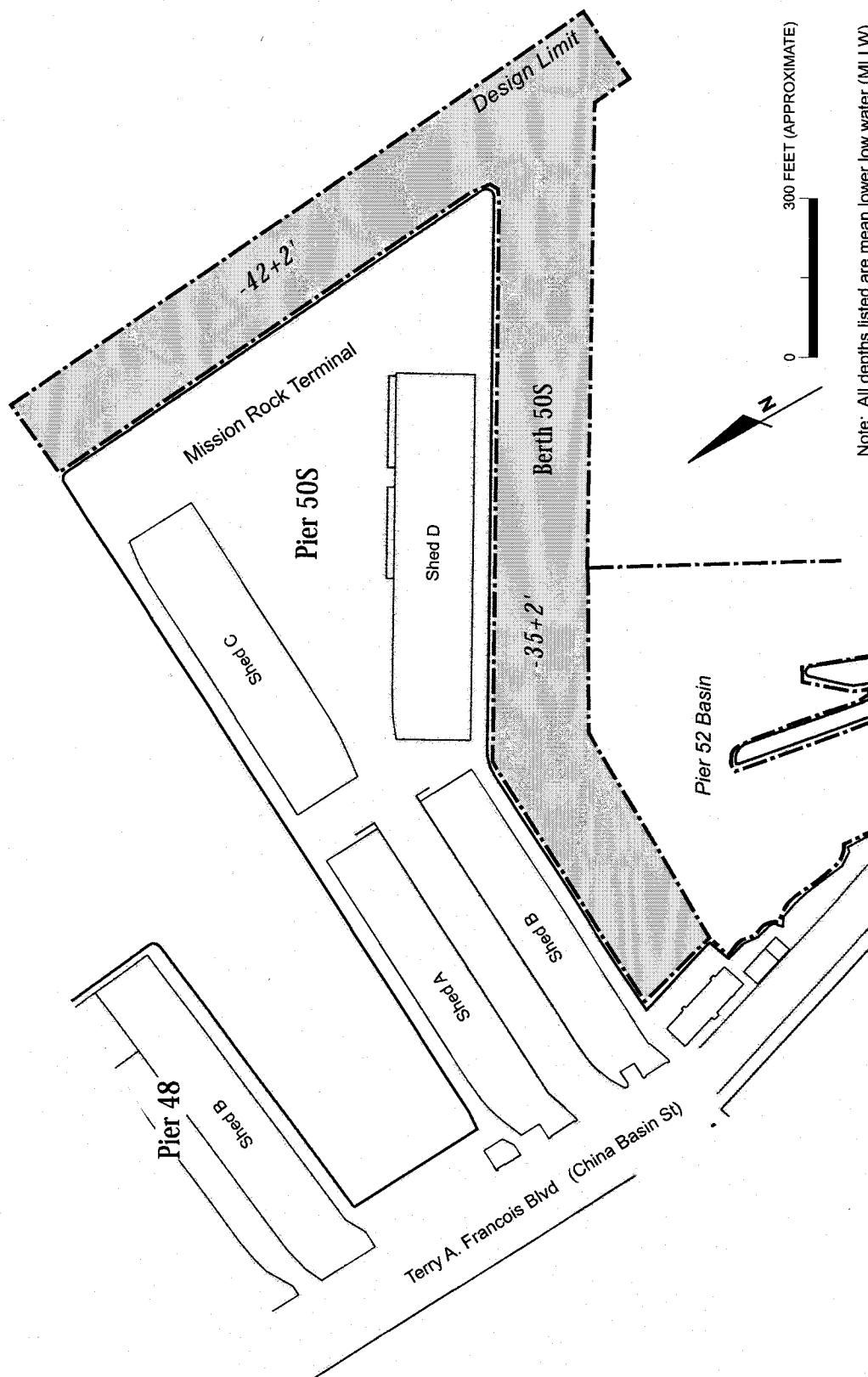




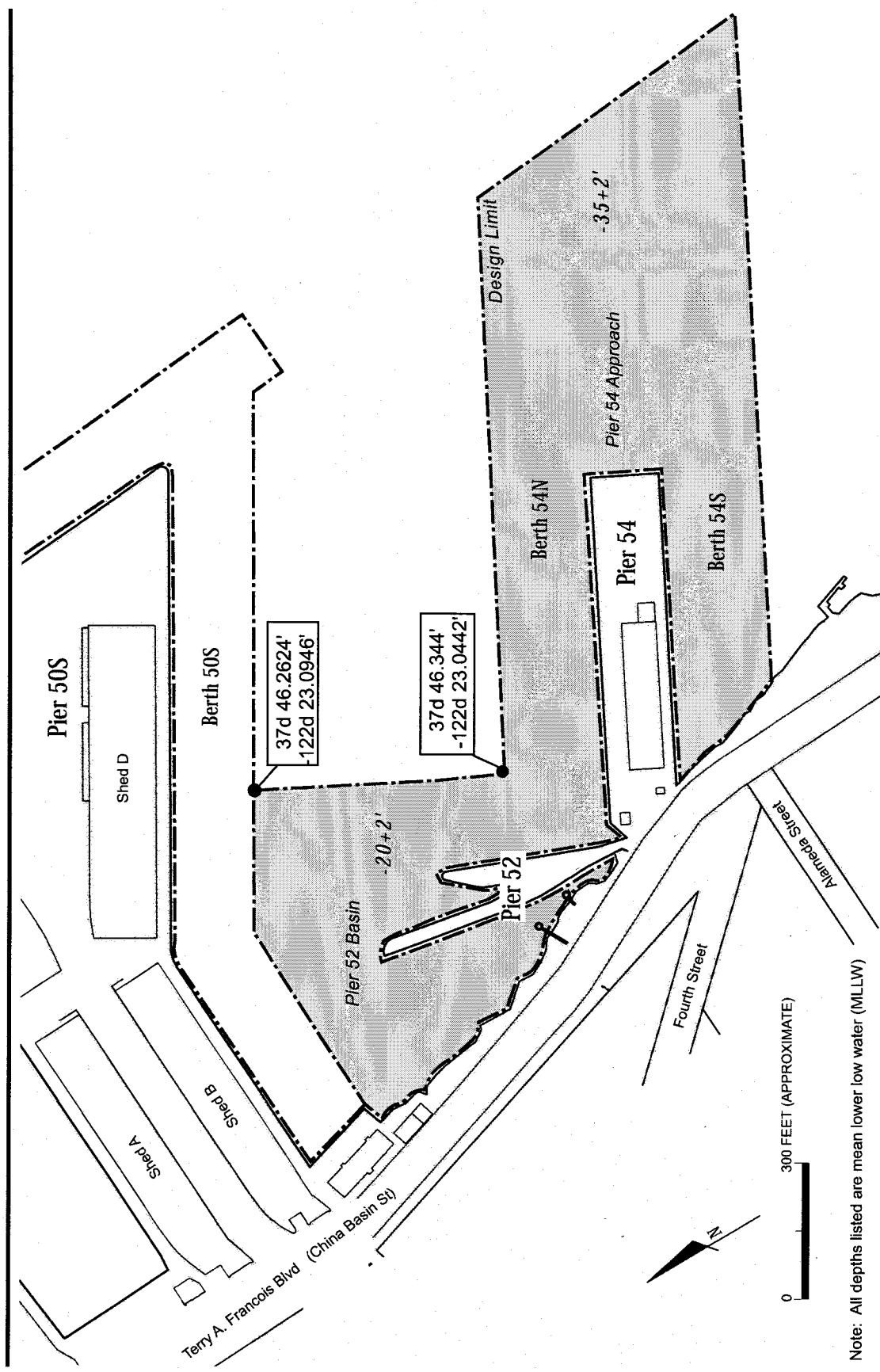
Source: Port of San Francisco, San Francisco Port Commission, Department of Engineering

Piers 30/32 Dredge Site Figure 14





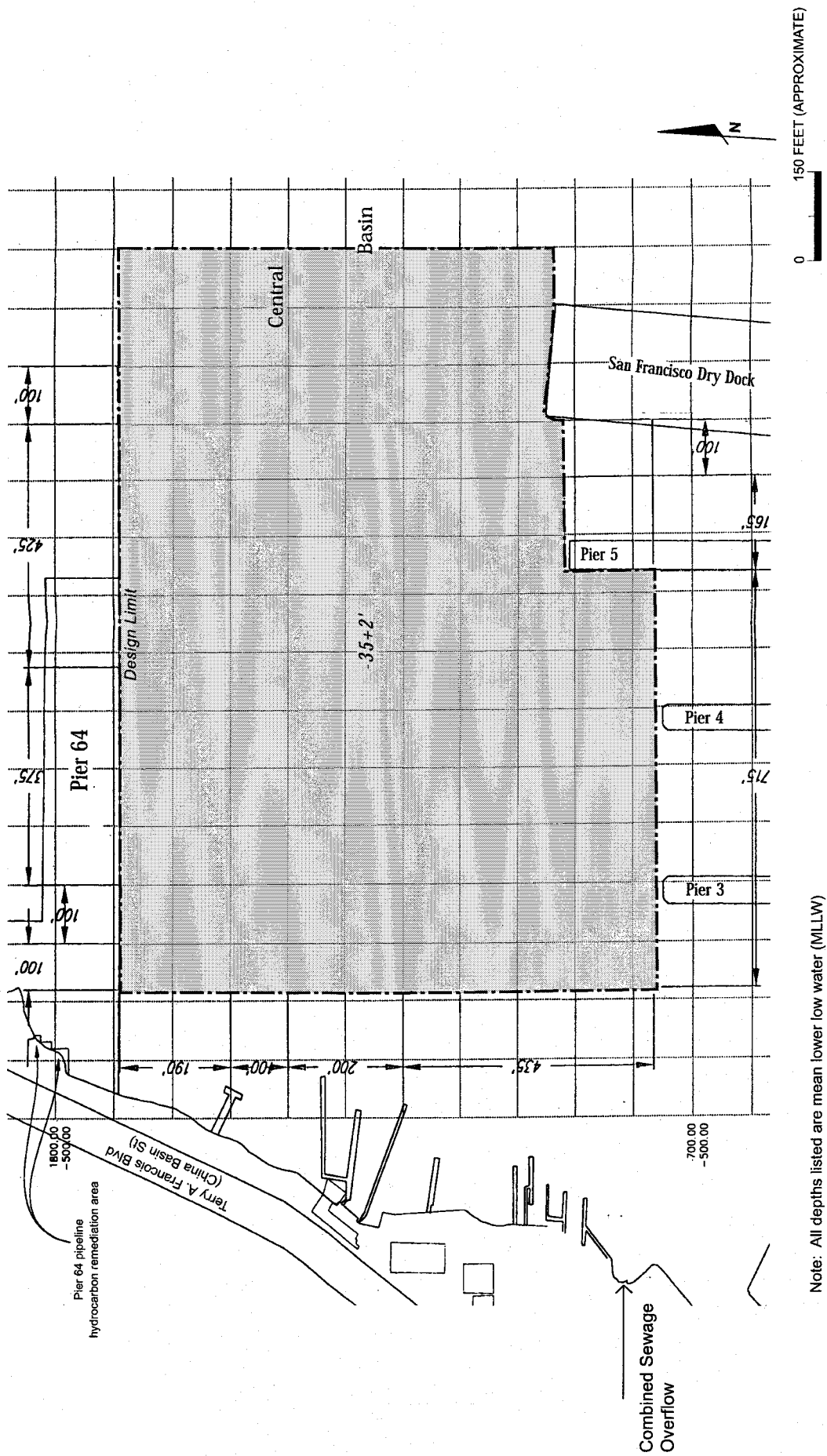
Source: Port of San Francisco, San Francisco Port Commission, Department of Engineering



Note: All depths listed are mean lower low water (MLLW)

Source: Port of San Francisco, San Francisco Port Commission, Department of Engineering

Piers 52 and 54 Dredge Sites Figure 17

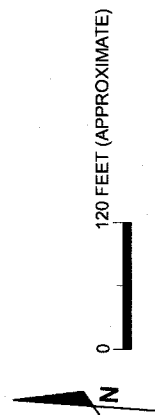
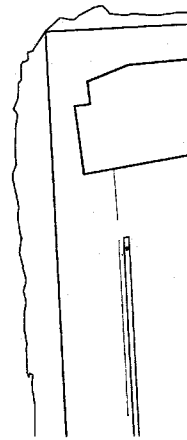
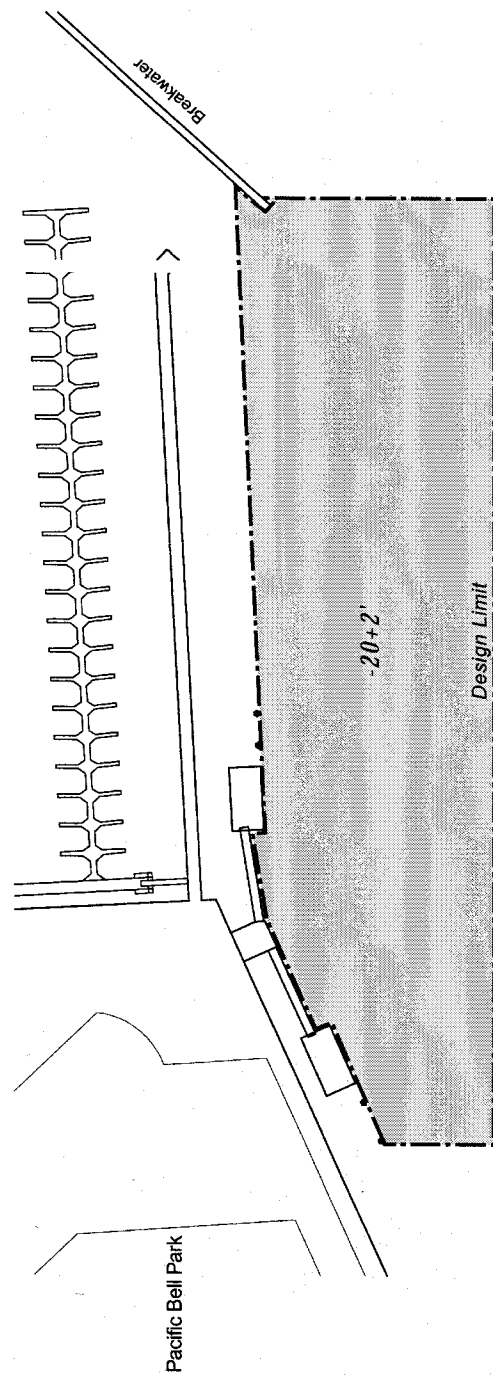


Note: All depths listed are mean lower low water (MLLW)

Source: Port of San Francisco, San Francisco Port Commission, Department of Engineering

Central Basin Dredge Site Figure 18

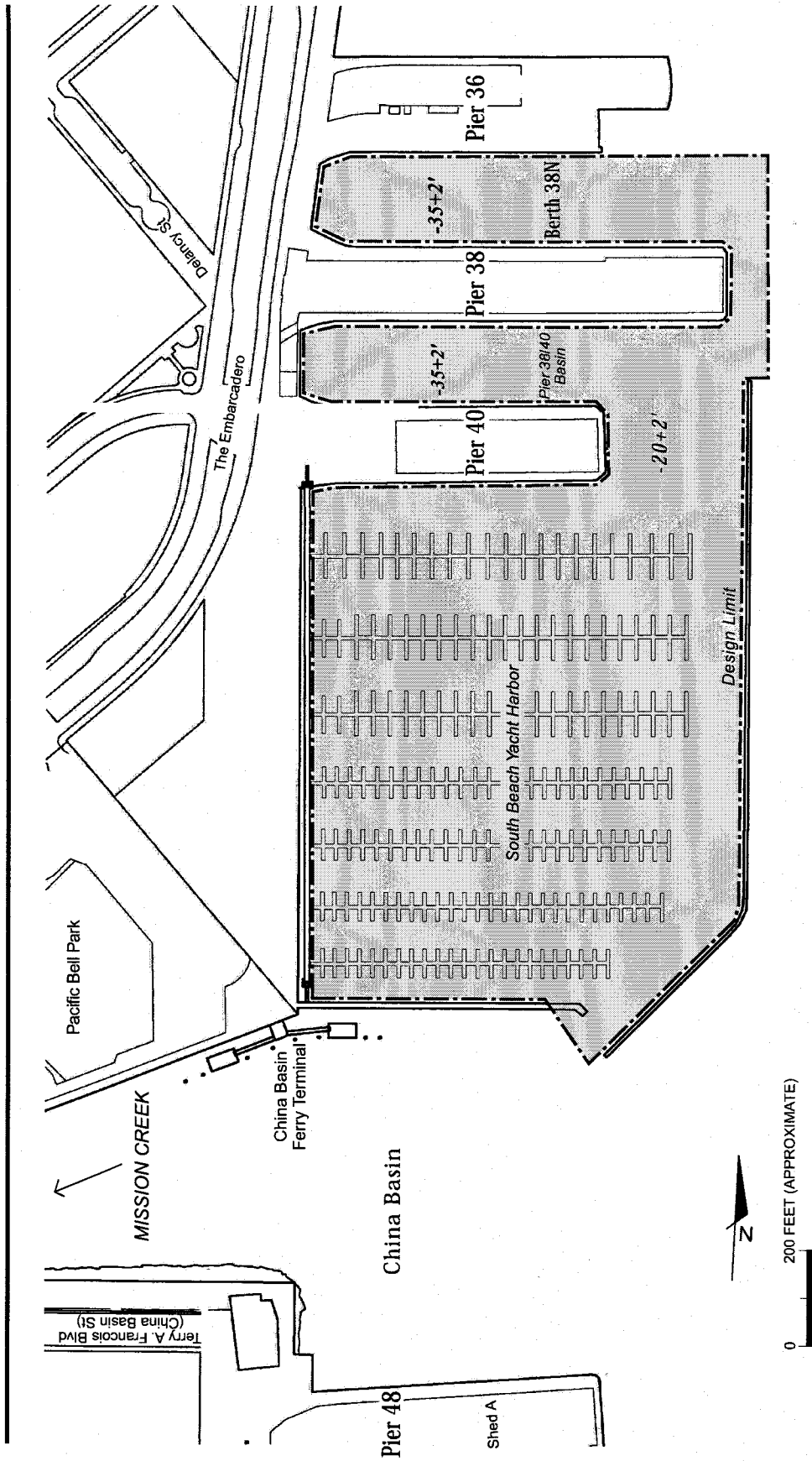




Note: All depths listed are mean lower low water (MLLW)

Source: Port of San Francisco, San Francisco Port Commission, Department of Engineering

China Basin Dredge Site Figure 20



Note: All depths listed are mean lower low water (MLLW)

Source: Port of San Francisco, San Francisco Port Commission, Department of Engineering

South Beach Yacht Harbor Piers 38 and 40 Dredge Site Figure 21